Best Response and Nash Equilibrium

Game Theory Course:
Jackson, Leyton-Brown & Shoham

Best Response

Game
Theory
Online

- If you knew what everyone else was going to do, it would be easy to pick your own action

Best Response

Game
Theory
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Bayesian Normal-form auctions
cooperative payoff utility
equilibrium class
Nash
strategies
zero-sum probability

- If you knew what everyone else was going to do, it would be easy to pick your own action
- Let $a_{-i} = \langle a_1, \ldots, a_{i-1}, a_{i+1}, \ldots, a_n \rangle$.
    - now $a = (a_{-i}, a_i)$

Definition (Best response)

$a_i^* \in BR(a_{-i})$ iff $\forall a_i \in A_i,\ u_i(a_i^*, a_{-i}) \geq u_i(a_i, a_{-i})$.

Nash Equilibrium

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- What can we say about which actions will occur?

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- What can we say about which actions will occur?

- Idea: look for stable action profiles.

Definition (Nash Equilibrium)

$a = \langle a_1, \ldots, a_n \rangle$ is a ("pure strategy") *Nash equilibrium* iff
$\forall i, a_i \in BR(a_{-i})$.